

Research Topic List

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At the January 2018 COSA meeting, it was suggested that COSA create a list of research topics that orthodontic residents could use as a resource to generate ideas for their thesis projects. The topics below are those that COSA, AAOF PARC and orthodontic program chairs have noted as areas of great interest in the current orthodontic literature. The initiative from COSA - to provide a research topic list - intends to stimulate research projects that will advance the specialty and will be published in orthodontic journals.

TOPICS

3D superimposition methods to evaluate growth and treatment effects

3D technology and any transitional research related to its integration to clinical orthodontics

- Imaging
- Printing
- Scanning
- From accuracy to application to implementation to liability

Accelerated Orthodontics

AJO-DO

- Current acceptance rates of manuscripts from US institutions
- Studies investigating reasons for shortage of "good science".
- IRBs
- Faculty shortage
- Materials sciences

Aligner Therapy

- Effectiveness and limitations

Biological Mechanisms of Tooth Movement

Bone Biology

CBCT

- 3D CBCT assessment of long term skeletal and dental arch stability after expansion with a MARPE Appliance

Class II Correctors

Condylar Loading

- Accurate measure of condylar loading

Craniofacial Anomalies

- Building genetics and genomic knowledge about dental, oral, and craniofacial diseases and disorders
- Building a database of craniofacial phenotypic variation and clinical diagnosis and treatment outcomes

Craniofacial Growth

- Interventional therapies to modulate craniofacial growth

Genetics

Growth Predictors

- how to improve accuracy on an individual basis

Incisor

- Optimal AP maxillary incisor position in African American males from a lateral smiling profile perspective

Interdisciplinary Research

- Prevention of gingival clefts – orthodontic and periodontic parameters
- Anything interdisciplinary is also of great importance when considering the ever-changing practice environment

Material Sciences

Microspheres and Bone-Tissue Engineering

Nasoalveolar Molding

- Prototyping technology for nasoalveolar molding

Orthodontic Biomechanics

Orthodontic Outcomes

- use of large data sets to understand better the factors that influence

Orthodontic Education

- How many of our orthodontic programs require publishable thesis projects (could be MS or PhD)
- What is the format they utilize from mentoring, to assignment of topics to publication of the manuscripts
- What are the differences between certificate vs MS programs with their curriculum related to research
- A subgroup would be to go back to the numbers of full time orthodontic faculty and their roles. Let's update this data. This might align well with the CODA standards that the AAO's committee will bring forward
- Quality of clinical orthodontic education with the change in the format from the ABO. New methods for outcomes assessment to assist our graduate programs.
- Use of computer-aided learning in orthodontic education
- 3D technology and its impact on current orthodontic curriculum
- Core Orthodontic Curricula – what are common topics that there is expert consensus on that should be covered to educate an orthodontic specialist

Psychosocial studies

- to improve understanding of oral health care behaviors & compliance, how to promote/change

Root resorption

- mechanisms, biomarkers, longevity of teeth with short roots

Self-Ligating Brackets

Sleep Apnea

- Epigenetic influences in sleep apnea

TADs

Technology

- Digital workflows in orthodontic practice
- Use of teledentistry for the orthodontic treatment of underserved populations
- Development of highly innovative tools and technology for improving orthodontics and dentofacial orthopedics
- Use of smartphones as a tool to modify oral-health behavior during orthodontic treatment

Tooth Eruption

- Mechanisms

Tooth Extraction

- Upper airway concerns after extraction in orthodontic treatment

Tooth Movement

- Biological mechanisms to accelerate rate of tooth movement
- Periodontal effects of significant maxillary and mandibular incisor movement
- Relationship of obesity and orthodontic tooth movement
- Vibration technology and orthodontic tooth movement (biological markers)

Vulnerable Populations

- Addressing the etiology of disparities in orthodontic services among vulnerable populations